



SEQUENCE LISTING

<110> Katagiri, Fumi

<120> OOMYCETE FTSZ-MT AS A TARGET FOR
ANTIMICROBIAL-SPECIFIC BIOCIDES



<130> NADII.018A
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<170> FastSEQ for Windows Version 4.0
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gat atc acc aag gga cta gga gct gga tcc aaa cct gag ctg ggt aaa 145 Asp Ile Thr Lys Gly Leu Gly Ala Gly Ser Lys Pro Glu Leu Gly Lys 35 40 45
cgc tct gcg gaa cag cag aaa gtg gat atc caa cgg atg tta cag gac 193 Arg Ser Ala Glu Gln Gln Lys Val Asp Ile Gln Arg Met Leu Gln Asp 50 55 60
agc aac atg ctg ttt atc acg ggc gga atg ggc gga acc tgc aca 241 Ser Asn Met Leu Phe Ile Thr Gly Gly Met Gly Gly Thr Cys Thr 65 70 75 80
gga gcc gca cct gtc gtg gcc agt gta gcc agg gag ctg ggg atc cta 289 Gly Ala Ala Pro Val Val Ala Ser Val Ala Arg Glu Leu Gly Ile Leu 85 90 95
acg gtc gga gta gta agc aca ccg ttc cga tcc gaa gga ccc aat cgc 337 Thr Val Gly Val Val Ser Thr Pro Phe Arg Ser Glu Gly Pro Asn Arg 100 105 110
act cgt ctg gcc aat gct gga gta aaa gaa ctg gcc aag tac gtc gac 385 Thr Arg Leu Ala Asn Ala Gly Val Lys Glu Leu Ala Lys Tyr Val Asp 115 120 125

acc Thr	tta Leu 130	att Ile	gtc Val	gtg Val	ccc Pro	aac Asn 135	cag Gln	aac Asn	ttg Leu	ctg Leu	gct Ala 140	ttg Leu	gca Ala	gac Asp	aag Lys	433
agc Ser 145	acg Thr	acc Thr	atg Met	ttg Leu	gaa Glu 150	gcc Ala	ttc Phe	cgg Arg	tat Tyr	gcc Ala 155	gac Asp	gac Asp	gtg Val	ctg Leu	ctt Leu 160	481
		gtt Val														529
aat Asn	_															535
<212 <213	L> 17 2> PF 3> Ph		ohtho	ora i	infes	stans	5									
)> 2 Ser	Gln	Leu	Glu 5	Gly	Val	Glu	Phe	Ile 10	Val	Ala	Asn	Thr	Asp 15	Cys	
_	Ala	Leu	Gly 20	Arg	Ser	Leu	Ala	Pro 25	His	Lys	Ile	Thr	Leu 30	Gly	Lys	
Asp	Ile	Thr 35	Lys	Gly	Leu	Gly	Ala 40	Gly	Ser	Lys	Pro	Glu 45	Leu	Gly	Lys	
Arg	Ser 50	Ala	Glu	Gln	Gln	Lys 55	Val	Asp	Ile	Gln	Arg 60	Met	Leu	Gln	Asp	
Ser 65	Asn	Met	Leu	Phe	Ile 70	Thr	Gly	Gly	Met	Gly 75	Gly	Gly	Thr	Cys	Thr 80	
_		Ala		85					90					95		
Thr	Val	Gly	Val 100	Val	Ser	Thr	Pro	Phe 105	Arg	Ser	Glu	Gly	Pro 110	Asn	Arg	
Thr	Arg	Leu 115	Ala	Asn	Ala	Gly	Val 120	Lys	Glu	Leu	Ala	Lys 125	Tyr	Val	Asp	
	_				_	_	~ 3	_	_	-		_		-	-	

Thr Leu Ile Val Val Pro Asn Gln Asn Leu Leu Ala Leu Ala Asp Lys

Ser Thr Thr Met Leu Glu Ala Phe Arg Tyr Ala Asp Asp Val Leu Leu

Glu Gly Val Lys Gly Val Thr Asp Leu Ile Val Arg Pro Gly Leu Ile

135

150

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Asn Leu

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140

170

155

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cag cac tta cgc acg acg ctg acg gag aac cgc gtt cag atg gct cct Gln His Leu Arg Thr Thr Leu Thr Glu Asn Arg Val Gln Met Ala Pro 20 25 30	97
gaa ttg act gga gga ttg ggc tgt ggc gct aac ccc gaa gtt ggg Glu Leu Thr Gly Gly Leu Gly Cys Gly Ala Asn Pro Glu Val Gly 35 40 45	142
tgagtgactg cgtaaaagcg gtatttttt ttcttacata ctgaccttaa ctattgatta gc cga gag gcg gca gag gcc gcg att gat gag att ttg gag cgc gtt Arg Glu Ala Ala Glu Ala Ala Ile Asp Glu Ile Leu Glu Arg Val 50 55 60	202 249
cag ggt gca aac atg gtttgtctcg gtgacattgc gtttctcaag acgttccgat Gln Gly Ala Asn Met 65	304
ttgagcgaat gacttggtga tgacaacgat atgattatta acttctgctt ttatgcccct atatag atg ttt gtt act gcg ggt Met Phe Val Thr Ala Gly 70	364 388
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cgc cag acc tcc cag tcc gcc act caa cac ctc gcc ttc tct act gaa Arg Gln Thr Ser Gln Ser Ala Thr Gln His Leu Ala Phe Ser Thr Glu 20 25 30	97
gcc act gat gct gca gct gcc gcg tta cgc atg ggc ttt aaa aag gct Ala Thr Asp Ala Ala Ala Ala Leu Arg Met Gly Phe Lys Lys Ala 35 40 45	145
cga aaa gac gag gat ggc ggt gtg aaa gtg ggg ctg gag gca gag ccc Arg Lys Asp Glu Asp Gly Gly Val Lys Val Gly Leu Glu Ala Glu Pro 50 55 60	193
gat tca cca aca gat gtg agc gcc gtt tcg acg cca gta gta gag aag Asp Ser Pro Thr Asp Val Ser Ala Val Ser Thr Pro Val Val Glu Lys 65 70 75 80	241
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cag Gln	gac Asp	cat His	cct Pro 100	gtg Val	aca Thr	gac Asp	ctg Leu	tcg Ser 105	ggc Gly	ttt Phe	gca Ala	ccg Pro	aag Lys 110	att Ile	gtg Val	337
gtg Val	gtt Val	ggc Gly 115	gtc Val	gga Gly	gga Gly	gct Ala	gga Gly 120	gga Gly	aat Asn	gcg Ala	gtg Val	aac Asn 125	aac Asn	atg Met	atc Ile	385
gcg Ala	cgc Arg 130	ggc Gly	ctg Leu	cag Gln	ggt Gly	gtg Val 135	gag Glu	ttt Phe	ctt Leu	gtt Val	tgc Cys 140	aac Asn	acg Thr	gat Asp	gct Ala	433
						ctg Leu										481
						ggc Gly										529
gag Glu	gcg Ala	gca Ala	gag Glu 180	gcc Ala	gcg Ala	att Ile	gat Asp	gag Glu 185	att Ile	ttg Leu	gag Glu	cgc Arg	gtt Val 190	cag Gln	ggt Gly	577
_		_	_		_	act Thr	~ ~		_							625
ggt Gly	gca Ala 210	gca Ala	ccc Pro	gtc Val	att Ile	gct Ala 215	cag Gln	gct Ala	gcc Ala	tta Leu	gat Asp 220	gct Ala	ggt Gly	atc Ile	ctc Leu	673
						aag Lys										721
gca Ala	aag Lys	ctt Leu	gcg Ala	gca Ala 245	caa Gln	ggc Gly	ctc Leu	gct Ala	gaa Glu 250	ctg Leu	aag Lys	gat Asp	agc Ser	gtc Val 255	gat Asp	769
						aac Asn										817
						gca Ala										865
						tcg Ser 295										913
						gtt Val					Gln					961

gct atg atg gga agt gga gag gcc gat gga gag aat cgg gct ctg cgt 10 Ala Met Met Gly Ser Gly Glu Ala Asp Gly Glu Asn Arg Ala Leu Arg 325 330 335	09
gct gct gaa gat gca ttg gcg aac cct ctt ctg ggt gat att tcg att Ala Ala Glu Asp Ala Leu Ala Asn Pro Leu Leu Gly Asp Ile Ser Ile 340 345 350	57
aag gac gcc aag ggc atg atc gtt aat atc acg gga ggc tcc gac ctg Lys Asp Ala Lys Gly Met Ile Val Asn Ile Thr Gly Gly Ser Asp Leu 355 360 365	05
acg cta ttt gaa gtt gat gag gct gct gag cgt gtg acg cgg gaa ctt 11 Thr Leu Phe Glu Val Asp Glu Ala Ala Glu Arg Val Thr Arg Glu Leu 370 375 380	53
gat gat cca cac gcc aac atc atc ttc ggt tcg acc ttc gac gac tcg Asp Asp Pro His Ala Asn Ile Ile Phe Gly Ser Thr Phe Asp Asp Ser 385 390 395 400	01
ctg ggc ggc aag cta cgc gtc tcc gtg gtt gcc act ggt att gcc gac 12 Leu Gly Gly Lys Leu Arg Val Ser Val Val Ala Thr Gly Ile Ala Asp 405 410 415	49
ccc gac aag tta tagaagccgt gatgttggcc agtatcaaag cgtaagcagg 13 Pro Asp Lys Leu 420	01
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<210> 11 <211> 583

<212> PRT

<213> Agrobacterium tumefaciens

<400> 11

 Met
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 Ile
 Gln
 Leu
 Gln
 Lys
 Pro
 Asp
 Ile
 Thr
 Glu
 Leu
 Lys
 Pro
 Arg

 1
 5
 5
 10
 10
 15
 15

 Ile
 Thr
 Val
 Phe
 Gly
 Gly
 Gly
 Gly
 Asn
 Ala
 Val
 Asn
 Asn

Gly Thr Gly Ala Ala Pro Val Val Ala Gln Ala Ala Arg Asn Lys Gly Ile Leu Thr Val Gly Val Val Thr Lys Pro Phe His Phe Glu Gly Gly Arg Arg Met Arg Leu Ala Glu Gln Gly Ile Glu Glu Leu Gln Lys Ser Val Asp Thr Leu Ile Val Ile Pro Asn Gln Asn Leu Phe Arg Ile Ala Asn Asp Lys Thr Thr Phe Ala Asp Ala Phe Ala Met Ala Asp Gln Val Leu Tyr Ser Gly Val Ala Cys Ile Thr Asp Leu Met Val Lys Glu Gly Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Ser Val Met Arg Glu Met Ala Arg Pro Met Met Gly Thr Gly Glu Ala Ser Gly Pro Ala Arg Ala Met Gln Ala Ala Glu Ala Ala Ile Ala Asn Pro Leu Leu Asp Glu Thr Ser Met Lys Gly Ala Gln Gly Leu Leu Ile Ser Ile Thr Gly Gly Arg Asp Leu Thr Leu Phe Glu Val Asp Glu Ala Ala Thr Arg Ile Arg Glu Glu Val Asp Pro Asp Ala Asn Ile Ile Leu Gly Ala Thr Phe Asp Glu Ala Leu Glu Gly Leu Ile Arg Val Ser Val Val Ala Thr Gly Ile Asp Arg Val Ala Gly Ile Gly Glu Gln Asn Ile Ala Glu Met Arg Ala Ala Ala Ala Lys Pro Leu Ile Arg Pro Ser Ala Ala Val Ala Pro Ala Pro Ala Ala Val Gln Pro Ala His Ala Val Ser Gln Ala Pro Lys Thr Val Asp Gln Ile Ala Gln Thr Ile Arg Ser Ala Glu Ala Glu Met Glu Arg Glu Leu Gly Phe Ala Ala His Gln Gln Pro Ser Gln Asp Phe Arg Pro Gln Ser Lys Leu Phe Ala Ser Ser Pro Ala Glu Ala Pro Ala Ala Leu Arg Pro Ala Gln Pro Val Gln Gln Ala Ala Pro Ala Pro Val Ala Gln Ala Pro Val Tyr His Ala Pro Glu Gln Val Ala Val Pro Ala Pro Arg Met Gln Gln Ala Gln Ala Pro Val Tyr Gln Glu Pro Ala Pro Val Gly Arg Gln Pro Glu Pro Val Arg Met Pro Lys Val Glu Asp Phe Pro Pro Val Val Lys Ala Glu Met Asp His Arg Asp Arg Ala Thr Pro Val Ala Gln Glu Glu Arg Gly Pro Met Gly Leu Leu Lys Arg Ile Thr Asn Ser Leu Gly Arg Arg Glu Glu Glu Val Pro Ser Asp Met Met Asp Ala Pro Ser Met Ala Pro Gln Arg Arg Ala Pro Leu Ser Pro Glu Ala Ser Leu Tyr Ala Pro Arg Arg Gly Gln Leu Asp Asp His Gly Arg Ala Thr

 Pro
 Ser
 Ser
 Ser His
 His
 Asp Asp Asp Gln Leu Glu Ile
 Pro
 Ala

 565
 570
 575

 Phe
 Leu Arg
 Arg
 Gln Ser
 Asn

 580
 580

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360 Gln Pro Leu Gln Gln Gln Asn Val Asp His Ile Ala Leu Ala Ile Arg 375 Glu Ala Glu Met Glu Arg Glu Leu Asp Ile Ala Ala Arg Ala Gln Val 395 390 Ala Pro Ala Pro Gln Pro Gln Pro His Leu Gln Glu Glu Ala Phe 410 Arg Pro Gln Ser Lys Leu Phe Ala Gly Val Ala Pro Thr Glu Ala Ala 425 430 Pro Val Met Arg Pro Ala Gln Pro Ala Pro Arg Pro Val Glu Met Gln 440 445 Ala Pro Val Gln Pro Gln Met Gln Ala Gln Pro Val Gln Glu Pro 455 460 Thr Gln Val Val Arg Gln Gln Ala Glu Pro Val Arg Met Pro Lys Val 470 475 Glu Asp Phe Pro Pro Val Val Lys Ala Glu Met Asp Tyr Arg Thr Gln 490 485 Pro Ala Pro Ala His Gln Glu Glu Arg Gly Pro Met Gly Leu Leu Asn 505 Arg Ile Thr Ser Ser Leu Gly Leu Arg Glu Arg Glu Ala Thr Asn Val 520 Ser Ser Asp Met Thr Ala Ala Pro Ser Ala Ala Ser Gln Gln Arg 540 535 Arg Pro Leu Ser Pro Glu Ala Ser Leu Tyr Ala Pro Arg Arg Gly Gln 555 550 Leu Asp Asp His Gly Arg Ala Ala Pro Gln Met Arg Ser His Glu Asp 565 570 Asp Gln Leu Glu Ile Pro Ala Phe Leu Arg Arg Gln Ser Ser 580 585

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<212> PRT

<213> Bartonella clarridgeiae

<400> 13

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Val Asp Thr Leu Ile Val Ile Pro Asn Gln Asn Leu Phe Arg Ile Ala Asn Glu Lys Thr Thr Phe Ser Asp Ala Phe Ala Met Ala Asp Gln Val Leu Tyr Ser Gly Val Ala Ser Ile Thr Asp Leu Met Ile Lys Glu Gly Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Ser Val Met His Glu Met Gly Arg Ala Met Met Gly Thr Gly Glu Ala Ser Gly Asp Gly Arg Ala Leu Ala Ala Ala Glu Ala Ala Ile Ala Asn Pro Leu Leu Asp Asp Thr Ser Met Arg Gly Ala Arg Gly Leu Leu Ile Ser Ile Thr Gly Gly Arg Asp Met Thr Leu Phe Glu Val Asp Glu Ala Ala Asn Arg Ile Arg Glu Glu Val Asp Ala Asp Ala Asn Val Ile Phe Gly Ala Ile Asp Asp Glu Ser Leu Glu Gly Val Ile Arg Val Ser Val Val Ala Thr Gly Ile Asp Arg Glu Ile Asn Asp Val Ile Gln Pro Ser Asn Thr Lys Phe His Arg Ser Ala Thr Ser Met Arg Lys Asn Asp Ala Gly Val Thr Gln Thr Ser Ser Gln Ser Ser Ser Leu Arg Ser Glu Ser Met Val Glu Val Ile Glu Ala Leu Glu Val Glu Met Lys Gln Pro Ile Glu Glu Pro Phe Cys Pro Lys Ser Gln Phe Phe Val Gln Ser Thr Asp Thr Tyr Thr Pro Arg Ser Met Asn Ala Ala Ser Tyr Gly Gln Asn Ile His Gly Gln Thr Ser Asn Ala Leu Arg Met Gln Val Gly Cys Val Ser Gln Gln Pro Val Ala Lys Ala Val Asn Met Glu Ala Thr Ala His Val Leu Asp Asp Met Thr Arg Ile Val Glu Gln Lys Lys Gln Ala Gln Met Gln Ser His Ser Met Ser Met Arg Met Pro Glu Leu Lys Asp Phe Pro Ser Ser Ile Arg Gly Gln Ser Thr Asn Phe Ser Asn Ala Asp Gln Gly Pro Arg Asn Leu Trp Gln Arg Leu Lys Gln Ser Leu Thr Tyr Arg Glu Glu Ala Glu Pro Glu Ala Arg Leu Glu Pro Ala Val Asn Ser Ser Leu Cys Lys Asp Ser His Ile Ser Ser Ala Ser Ser Gln Gly Ile Ser Gln Asp Thr Ser Val Tyr Ile Pro Arg His Ser Thr Glu Leu Gln Gln His Ala Ser Gln Asp Gln Asn Val Cys Val Ser Glu Glu Asp Glu Leu Glu Ile Pro Ala Phe Leu Arg Arg Gln Ala Asn

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<211> 452 <212> PRT

<213> Rickettsia prowazekii

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Asn Asn Gln Thr Leu Glu Arg Lys Asn Val Ile Val Asn Thr Val Asp 420 425 430

Gln Asp Asn Lys Glu Ser Asp Ile His Asp Ile Pro Ala Phe Leu Arg 435

Lys Lys Arg Asp 450

<210> 15 <211> 508 <212> PRT <213> Caulobacter crescentus

<400> 15 Met Ala Ile Ser Leu Ser Ala Pro Arg Thr Thr Glu Leu Lys Pro Arg 10 Ile Val Val Phe Gly Val Gly Gly Ala Gly Gly Asn Ala Val Asn Asn Met Ile Glu Ala Gly Leu Glu Gly Val Glu Phe Val Val Ala Asn Thr 40 Asp Ala Gln Gln Leu Gln Phe Ala Lys Thr Asp Arg Arg Ile Gln Leu Gly Val Gln Ile Thr Gln Gly Leu Gly Ala Gly Ala His Pro Glu Val 70 Gly Met Ser Ala Ala Glu Glu Ser Phe Pro Glu Ile Gly Glu His Leu 90 Asp Gly Ala His Met Val Phe Ile Thr Ala Gly Met Gly Gly Thr 105 100 Gly Thr Gly Ala Ala Pro Ile Ile Ala Lys Cys Ala Arg Glu Arg Gly 120 Ile Leu Thr Val Gly Val Val Thr Lys Pro Phe His Phe Glu Gly Arg 140 135 His Arg Met Arg Leu Ala Asp Ser Gly Ile Gln Glu Leu Gln Arg Tyr 150 155 Val Asp Thr Leu Ile Val Ile Pro Asn Gln Asn Leu Phe Arg Val Ala 170 165 Asn Glu Arg Thr Thr Phe Ala Glu Ala Phe Gly Met Ala Asp Gln Val 185 Leu His Ser Gly Val Arg Ser Ile Thr Asp Leu Met Val Leu Pro Gly 200 205 Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Thr Val Met Thr Glu Met 215 220 Gly Lys Ala Met Met Gly Thr Gly Glu Gly Thr Ala Glu Asp Arg Ala 230 235 Leu Met Ala Ala Gln Asn Ala Ile Ala Asn Pro Leu Leu Asp Glu Val 250 245 Ser Leu Lys Gly Ala Lys Ala Val Leu Val Asn Val Thr Gly Gly Met 270 260 265 Asp Met Thr Leu Leu Glu Val Asp Glu Ala Ala Asn Ala Ile Ser Asp 280 Gln Val Asp Pro Glu Ala Asn Ile Ile Phe Gly Ala Ala Phe Asp Pro 295 Ser Leu Glu Gly Val Ile Arg Val Ser Val Val Ala Thr Gly Met Asp 315 Gly Ala Ser Ile Ala Gln Ile Glu Pro Lys Pro Val Ser Arg Asn Ile 330 Ser Ala Ala Pro Leu Ile Ala Glu Thr Ser Arg Pro Ala Pro Gln Pro

345 340 Glu Pro Ala Arg Pro Thr Ala Arg Tyr Glu Ala Ala Arg Pro Ala Glu 360 Arg Pro Val Ala Phe Ala Pro Glu Pro Ala Pro Glu Pro Glu Ile Val 380 375 Met Ser Ala Pro Gln Pro Glu Pro Glu Ala Glu Leu Tyr Tyr Asp Glu 390 395 Pro Thr Val Ala Glu Glu Pro Arg Val Ser Ala Ala Pro Ala Arg Ser 405 410 Val Asn Arg Ile Val Asp Pro Leu Val Asp Asp Val Ala Glu Glu Pro 425 430 420 Leu Phe Pro Glu Asn Asn Tyr Tyr Glu Glu Arg Arg Pro Gln Lys Gln 445 440 Gly Gly Phe Phe Ser Met Phe Gly Gly Gly Arg Gln Arg Tyr Glu Gln 460 455 Gln Ala Ser Ala Pro Gln Ala Gln Ala Arg Ser Ala Gln Ser Ala Arg 475 470 Pro Gln Leu Gln Pro Ile Glu Thr Pro Gln Ala Asp Asp Ala Glu Asp 485 490 Leu Glu Ile Pro Ser Phe Leu Arg Arg Leu Ala Asn 505

<210> 16

<211> 407

<212> PRT

<213> Cyanidioschyzon merolae

<400> 16

Met Thr Gly Ala Leu Arg Tyr Arg Ala Leu Ala Arg Val Ile Glu Arg Cys Leu Gly Ser Arg Ala Leu Gly Glu Ser Gly Ser Ala Ala Ala Val 25 Ser Asn Tyr Val Trp Gln Arg Glu Ala Ser Arg Gly Phe Val Leu Gly 40 Thr Arg Leu Leu Pro Trp Cys Pro Leu Gly Ser Arg Leu Leu His Ser 55 Pro Ser Gln Thr Ala Ser Val Ile Arg Met Asn Thr Gly Ser Phe Ala Pro Lys Pro Asp Leu Gly Glu Gln Gln Pro Asn Thr Leu Thr Gly Gln 90 Pro Arg Ile Met Val Val Gly Val Gly Ala Gly Gly Asn Ala Val 100 105 Asn Asn Met Ile Ala Ser Ser Leu Pro Gly Val Glu Phe Leu Val Ala 120 125 Asn Thr Asp Ala Gln Ala Leu Lys Met Ser Leu Cys Pro Asn Arg Ile 135 140 Gln Leu Gly Ala Ser Leu Thr Glu Gly Leu Gly Ala Gly Ala Arg Pro 150 155 Asp Ile Gly Arg Ala Ala Ala Glu Glu Ala Tyr Glu Thr Leu Lys Arg 170 165 Glu Phe Arq Gly Val His Leu Leu Phe Val Thr Ala Gly Met Gly Gly Gly Thr Gly Thr Gly Ala Ala Pro Ile Ile Ala Arg Ala Ala Ala Glu 200 205 Leu Gly Cys Leu Thr Val Ala Val Val Thr Lys Pro Phe His Phe Glu 215



Gly Met Ile Arg Met Lys Thr Ala Glu Gln Gly Ile Val Glu Leu Thr 230 235 Glu His Val Asp Thr Met Leu Val Ile Pro Asn Gln Asn Leu Phe Lys 250 Val Ala Ser Pro Arg Thr Ser Phe Leu Asp Ala Phe Arg Leu Ala Asp 265 His Val Leu Tyr Ser Gly Val Arg Ser Ile Thr Asp Leu Met Thr Val 280 Pro Gly Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Ser Val Val Arg 300 295 Glu Met Gly Arg Ala Met Met Gly Ser Gly Glu Val Glu Met Glu Ala 310 315 Gly Asn Glu Glu Arg Ala Ile Arg Ala Ser Glu Ala Ala Ile Cys Asn 330 325 Pro Leu Leu Asp Glu Thr Ser Leu Arg Gly Ala Arg Gly Val Leu Val 340 345 Asn Ile Thr Gly Gly Thr Asp Met Thr Leu Phe Glu Ile Asp Ala Ala 360 Ala Asn Arg Ile Arg Glu Gln Val Asp Pro Asp Ala Asn Ile Ile Phe 375 380 Gly Ser Ala Phe Asp Ala Ser Met Gln Gly Arg Leu Arg Val Ser Val 390 395 Leu Ala Thr Gly Ile Pro Ser 405

<210> 17 <211> 401 <212> PRT <213> Mallomonas splendens

Met Arg Ile Thr Gly Ala Asn Arg Ile Leu Ser Leu Ser Arg Ile Arg His Phe Ser Asp Gly Ala Ser Leu Asn Lys Ala Phe Leu Arg Ser Val 25 Lys Pro Gly Val Lys Pro Glu Gln Tyr Asp Ser Arg Ser Gly Asn Ser 40 45 Ser Gln Ala Gln Ser Thr Glu His Val Lys Asp Lys Phe Val Glu Pro 55 60 Gly Asn Leu Arg Phe Arg Thr Gly Glu Tyr Ile Thr Glu Phe Leu Pro 70 75 Lys Ile Cys Val Phe Gly Val Gly Gly Gly Cys Asn Ala Val Asn 90 Asn Met Ile Ala Arg Lys Leu Ser Gly Val Glu Phe Val Cys Ala Asn 105 Thr Asp Ala Gln His Leu Ser Thr Cys Leu Thr Glu Asn Lys Leu Gln 120 Leu Gly Lys Glu Ser Thr Gln Gly Leu Gly Cys Gly Ala Asn Pro Glu Ser Gly Arq Arq Ala Ala Glu Glu Ser Lys Glu Glu Ile Ala Arg Tyr Ile Ala Asp Ala Asn Met Val Phe Ile Thr Ala Gly Met Gly Gly 170 175 Thr Gly Thr Gly Ala Ala Pro Val Val Ala Glu Val Cys Met Glu Lys 185 Asp Ile Leu Thr Val Ala Val Val Thr Lys Pro Phe Ser Phe Glu Gly

200 Lys His Arg Ala Arg Leu Ala Asn Glu Gly Ile Arg Ser Leu Glu Asp 215 220 Arg Val Asp Thr Leu Ile Ile Ile Pro Asn Gln Asn Ile Phe Lys Leu 230 235 Ile Asn Ala Ser Thr Ser Met Ala Asp Ala Phe Gly Leu Ala Asp Asp 245 250 Ile Leu Leu Ala Gly Val Lys Ser Ile Thr Asp Leu Met Val Arg Pro 265 Gly Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Thr Val Met Ser Gly 280 Met Gly His Ala Ile Met Gly Thr Gly Gln Ala Glu Gly Glu Asp Arg 300 295 Ala Ile Arg Ala Ala Asn Asp Ala Leu Asn Asn Pro Leu Leu Gly Gly 310 315 Asp Phe Ser Val Arg Ser Ala Lys Gly Met Leu Val Asn Ile Thr Gly 330 325 Gly Lys Asp Leu Thr Leu Val Glu Val Asp Ala Ala Gln Arg Ile 345 340 Thr Ser Glu Ile Glu Asp Glu Asp Ala Asn Val Ile Phe Gly Ser Ser 360 Phe Asp Glu Ser Leu Gln Gly Ser Ile Arg Val Ser Ile Val Ala Thr 375 Gly Ile Glu Ala Pro Gly Ala Ala Ala Ala Thr Ala Ala Pro Val Ile 390 395 Arg

<210> 18 <211> 483 <212> PRT

<213> Gentiana lutea

<400> 18 Met Ala Thr Ser Thr Ser Pro Cys Phe Thr Pro Tyr Asp Ile Gln Ser Pro Ser Arg Val Met Thr Thr Phe Gly Gly Arg Ile Ser Pro Met Lys Met Asn Leu Phe His Glu Lys Lys Val Phe Trp Val Phe Asp Gln Lys Gly Ser Arg Ile Tyr Pro His Phe Lys Cys Ser Thr Asn Ser His Asn Val Asn Gln His Gln Ser Lys Asp Pro Phe Leu Asn Leu His Pro Glu 70 75 Ile Ser Leu Leu Arg Gly Asp Gly Asn Asn Thr Leu Val Asp Ser Arg 85 90 Val Asp Thr Ala Gly Ser Gly Arg Ser Val Thr Glu Ser Leu Arg Asp 105 Ser Ser Ser Ser Asn Asn Tyr Ser Glu Ala Lys Ile Lys Val Val Gly 120 125 Val Gly Gly Gly Ser Asn Ala Val Asn Arg Met Ile Glu Ser Ala 135 140 Met Lys Gly Val Glu Phe Trp Ile Val Asn Thr Asp Val Gln Ala Ile 155 150 Lys Met Ser Pro Val Tyr Leu Glu Asn Arg Leu Gln Ile Gly Gln Glu 170

Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn Pro Asp Ile Gly Met Asn 185 180 Ala Ala Lys Glu Ser Lys Glu Ala Ile Glu Glu Ala Val Tyr Gly Ala 205 200 195 Asp Met Val Phe Val Thr Ala Gly Met Gly Gly Gly Thr Gly Thr Gly 220 215 Gly Ala Pro Val Ile Ala Gly Ile Ala Lys Ser Met Gly Ile Leu Thr 230 235 Val Gly Ile Val Thr Thr Pro Phe Ser Phe Glu Gly Arg Arg Arg Ala 250 Val Gln Ala Gln Glu Gly Ile Ala Ala Leu Arg Asp Asn Val Asp Thr 265 270 Leu Ile Val Ile Pro Asn Asp Lys Leu Leu Thr Ala Val Ser Pro Ser 285 280 Thr Pro Val Thr Glu Ala Phe Asn Leu Ala Asp Asp Ile Leu Arg Gln 300 295 Gly Val Arg Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn 315 310 Val Asp Phe Ala Asp Val Arg Ala Ile Met Ala Asn Ala Gly Ser Ser 330 325 Leu Met Gly Ile Gly Thr Ala Thr Gly Lys Thr Arg Ala Arg Asp Ala 340 345 Ala Leu Asn Ala Ile Gln Ser Pro Leu Leu Asp Ile Gly Ile Glu Arg 365 360 Ala Thr Gly Ile Val Trp Asn Ile Thr Gly Gly Ser Asp Leu Thr Leu 375 380 Phe Glu Val Asn Ala Ala Ala Glu Val Ile Tyr Asp Leu Val Asp Pro 395 390 Ser Ala Asn Leu Ile Phe Gly Ala Val Val Asp Pro Ser Leu Cys Gly 405 410 Gln Val Ser Ile Thr Leu Ile Ala Thr Gly Phe Lys Arg Gln Glu Glu 425 420 Ser Asp Lys Arg Ser Ile Gln Ala Gly Gly Gln Leu Ala Pro Gly Asp 440 Ala Asn Gln Gly Ile Asn Arg Arg Pro Ser Ser Phe Ser Glu Ser Gly 455 460 Ser Val Glu Ile Pro Glu Phe Leu Arg Lys Lys Gly Arg Ser Arg Tyr 470 Pro Arg Ala

<210> 19 <211> 468 <212> PRT <213> Nicotiana tabacum

Leu Leu Arg Gly Glu Glu Ser Ser Ser Gly Asn Val Thr Glu Ser Leu Met Asp Ser Ser Arg Ser Asn Asn Phe Asn Glu Ala Lys Ile Lys Val Val Gly Val Gly Gly Gly Ser Asn Ala Val Asn Arg Met Ile Glu Ser Ser Met Lys Gly Val Glu Phe Trp Ile Val Asn Thr Asp Ile Gln Ala Met Arg Met Ser Pro Val Ala Ala Glu Gln Arg Leu Pro Ile Gly Gln Glu Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn Pro Asp Ile Gly Met Asn Ala Ala Asn Glu Ser Lys Gln Ala Ile Glu Glu Ala Val Tyr Gly Ala Asp Met Val Phe Val Thr Ala Gly Met Gly Gly Gly Thr Gly Thr Gly Ala Ala Pro Ile Ile Ala Gly Thr Ala Lys Ser Met Gly Ile Leu Thr Val Gly Ile Val Thr Thr Pro Phe Ser Phe Glu Gly Arg Arg Arg Ala Val Gln Ala Gln Glu Gly Ile Ala Ala Leu Arg Glu Asn Val Asp Thr Leu Ile Val Ile Pro Asn Asp Lys Leu Leu Thr Ala Val Ser Pro Ser Thr Pro Val Thr Glu Ala Phe Asn Leu Ala Asp Asp Ile Leu Arg Gln Gly Val Arg Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn Val Asp Phe Ala Asp Val Arg Ala Ile Met Ala Asn Ala Gly Ser Ser Leu Met Gly Ile Gly Thr Ala Thr Gly Lys Thr Arg Ala Arg Asp Ala Ala Leu Asn Ala Ile Gln Ser Pro Leu Leu Asp Ile Gly Ile Glu Arg Ala Thr Gly Ile Val Trp Asn Ile Thr Gly Gly Ser Asp Leu Thr Leu Phe Glu Val Asn Ala Ala Ala Glu Val Ile Tyr Asp Leu Val Asp Pro Ser Ala Asn Leu Ile Phe Gly Ala Val Ile Asp Pro Ser Ile Ser Gly Gln Val Ser Ile Thr Leu Ile Ala Thr Gly Phe Lys Arg Gln Glu Glu Ser Asp Gly Arg Pro Leu Gln Gly Asn Gln Leu Thr Gln Gly Asp Val Ser Leu Gly Asn Asn Arg Arg Pro Ala Ser Phe Leu Glu Gly Gly Ser Val Glu Ile Pro Glu Phe Leu Arg Lys Lys Gly Arg Ser Arg Tyr Pro Arg Ala

<210> 20

<211> 397

<212> PRT

<213> Arabidopsis thaliana

<400> 20 Met Leu Arg Gly Glu Gly Thr Ser Thr Ile Val Asn Pro Arg Lys Glu Thr Ser Ser Gly Pro Val Val Glu Asp Phe Glu Glu Pro Ser Ala Pro 25 Ser Asn Tyr Asn Glu Ala Arg Ile Lys Val Ile Gly Val Gly Gly 40 Gly Ser Asn Ala Val Asn Arg Met Ile Glu Ser Glu Met Ser Gly Val 55 60 Glu Phe Trp Ile Val Asn Thr Asp Ile Gln Ala Met Arg Met Ser Pro 70 75 Val Leu Pro Asp Asn Arg Leu Gln Ile Gly Lys Glu Leu Thr Arg Gly 90 85 Leu Gly Ala Gly Gly Asn Pro Glu Ile Gly Met Asn Ala Ala Arg Glu 100 105 Ser Lys Glu Val Ile Glu Glu Ala Leu Tyr Gly Ser Asp Met Val Phe 120 Val Thr Ala Gly Met Gly Gly Gly Thr Gly Thr Gly Ala Ala Pro Val 135 Ile Ala Gly Ile Ala Lys Ala Met Gly Ile Leu Thr Val Gly Ile Ala 155 150 Thr Thr Pro Phe Ser Phe Glu Gly Arg Arg Arg Thr Val Gln Ala Gln 165 170 Glu Gly Leu Ala Ser Leu Arg Asp Asn Val Asp Thr Leu Ile Val Ile 180 185 Pro Asn Asp Lys Leu Leu Thr Ala Val Ser Gln Ser Thr Pro Val Thr 200 195 Glu Ala Phe Asn Leu Ala Asp Asp Ile Leu Arg Gln Gly Val Arg Gly 215 220 Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn Val Asp Phe Ala 235 230 Asp Val Arg Ala Ile Met Ala Asn Ala Gly Ser Ser Leu Met Gly Ile 245 250 Gly Thr Ala Thr Gly Lys Ser Arg Ala Arg Asp Ala Ala Leu Asn Ala 265 Ile Gln Ser Pro Leu Leu Asp Ile Gly Ile Glu Arg Ala Thr Gly Ile 280 Val Trp Asn Ile Thr Gly Gly Ser Asp Leu Thr Leu Phe Glu Val Asn 300 295 Ala Ala Ala Glu Val Ile Tyr Asp Leu Val Asp Pro Thr Ala Asn Leu 310 315 Ile Phe Gly Ala Val Val Asp Pro Ala Leu Ser Gly Gln Val Ser Ile 325 330 Thr Leu Ile Ala Thr Gly Phe Lys Arg Gln Glu Glu Gly Glu Gly Arg 345 340 Thr Val Gln Met Val Gln Ala Asp Ala Ala Ser Val Gly Ala Thr Arg 360 Arg Pro Ser Ser Phe Arg Glu Ser Gly Ser Val Glu Ile Pro Glu 375 Phe Leu Lys Lys Cly Ser Ser Arg Tyr Pro Arg Val 390

<210> 21 <211> 458 <212> PRT

<213> Physcomitrella patens

<400> 21 Met Ala Leu Phe Ser Gly Cys Ser Gly Trp Ala Gly Leu Lys Val Ser 10 Ser Arg Val Gly Gly Glu Ala Cys Arg Thr Pro Pro Val Val His Cys 25 Ser Met His Ser Arg Ser Ser Val Arg Ala Leu Arg Arg Ile Asp Arg 40 Ala Leu Ser Asn Gly Gly Leu Cys Asn Phe Gly Glu Arg Asp Leu Leu 55 Ala Leu Glu Ala Lys Ser Pro Leu Arg Cys Glu Pro Pro Ser Ser Val 70 75 Met Arg Asn Pro Val Met Ala Phe Glu Gly Ser Gly Asp Asp Thr Gly 85 90 Ser Tyr Asn Glu Ala Lys Ile Lys Val Ile Gly Val Gly Gly Gly Gly 105 Ser Asn Ala Val Asn Arg Met Leu Glu Ser Glu Met Gln Gly Val Glu 120 Phe Trp Ile Val Asn Thr Asp Ala Gln Ala Met Ala Leu Ser Pro Val 135 Pro Ala Gln Asn Arg Leu Gln Ile Gly Gln Lys Leu Thr Arg Gly Leu 150 155 Gly Ala Gly Gly Asn Pro Glu Ile Gly Cys Ser Ala Ala Glu Glu Ser 165 170 Lys Ala Met Val Glu Glu Ala Leu Arg Gly Ala Asp Met Val Phe Val 180 185 Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro Ile Ile 200 Ala Gly Val Ala Lys Gln Leu Gly Ile Leu Thr Val Gly Ile Val Thr 215 220 Thr Pro Phe Ala Phe Glu Gly Arg Arg Arg Ala Val Gln Ala His Glu 230 235 Gly Ile Ala Ala Leu Lys Asn Asn Val Asp Thr Leu Ile Thr Ile Pro 250 Asn Asn Lys Leu Leu Thr Ala Val Ala Gln Ser Thr Pro Val Thr Glu 260 265 Ala Phe Asn Leu Ala Asp Asp Ile Leu Arg Gln Gly Val Arg Gly Ile 280 285 Ser Asp Ile Ile Thr Val Pro Gly Leu Val Asn Val Asp Phe Ala Asp 295 300 Val Arg Ala Ile Met Ala Asn Ala Gly Ser Ser Leu Met Gly Ile Gly 310 315 Thr Ala Thr Gly Lys Ser Arg Ala Arg Glu Ala Ala Leu Ser Ala Ile 325 330 Gln Ser Pro Leu Leu Asp Val Gly Ile Glu Arg Ala Thr Gly Ile Val 345 350 Trp Asn Ile Thr Gly Gly Ser Asp Met Thr Leu Phe Glu Val Asn Ala 360 Ala Ala Glu Val Ile Tyr Asp Leu Val Asp Pro Asn Ala Asn Leu Ile 375 Phe Gly Ala Val Val Asp Glu Ala Leu His Gly Gln Val Ser Ile Thr 390 395 Leu Ile Ala Thr Gly Phe Ser Ser Gln Asp Glu Pro Asp Ala Arg Ser 410 Met Gln Asn Val Ser Arg Ile Leu Asp Gly Gln Ala Gly Arg Ser Pro 425

Thr Gly Leu Ser Gln Gly Ser Asn Gly Ser Ala Ile Asn Ile Pro Ser
435 440 445

Phe Leu Arg Lys Arg Gly Gln Thr Arg His
450 455

<210> 22 <211> 464 <212> PRT <213> Physcomitrella patens

<400> 22 Met Ala Leu Leu Gly Ser Arg Ser Gly Leu Val Gly Leu Arg Val Ser 10 Ser Arg Val Gly Glu Ser Ser Arg Ile Val Pro Ala Thr Arg Asp 25 Arg Phe Cys Val His Leu Arg Pro Ser Thr Arg Ala His Arg Arg Leu Asp Arg Thr Val Gly Asn Glu Ser Leu Cys Thr Pro Arg Glu Arg Asp 55 Leu Ala Ala Glu Pro Lys Phe Leu His Thr Gly Trp Glu Ser Ser 70 Ser Ser Ser Ser Ser Cys Glu Thr Gly Ile Pro Val Thr Ala Phe 85 90 Gly Gly Asn Gly Asp Glu Tyr Glu Ser Ser Asn Glu Ala Lys Ile Lys 105 Val Ile Gly Val Gly Gly Gly Ser Asn Ala Val Asn Arg Met Leu 120 Glu Ser Glu Met Gln Gly Val Glu Phe Trp Ile Val Asn Thr Asp Ala 135 Gln Ala Met Ala Leu Ser Pro Val Pro Ala Gln Asn Arg Leu Gln Ile 150 155 Gly Gln Lys Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn Pro Glu Ile 165 170 Gly Cys Ser Ala Ala Glu Glu Ser Lys Ala Met Val Glu Glu Ala Leu 185 190 Arg Gly Ala Asp Met Val Phe Val Thr Ala Gly Met Gly Gly Gly Thr 200 205 Gly Ser Gly Ala Ala Pro Ile Ile Ala Gly Val Ala Lys Gln Leu Gly 215 220 Ile Leu Thr Val Gly Ile Val Thr Thr Pro Phe Ala Phe Glu Gly Arg 230 235 Arg Arg Ser Val Gln Ala His Glu Gly Ile Ala Ala Leu Lys Asn Asn 250 245 Val Asp Thr Leu Ile Thr Ile Pro Asn Asn Lys Leu Leu Thr Ala Val 265 Ala Gln Ser Thr Pro Val Thr Glu Ala Phe Asn Leu Ala Asp Asp Ile 280 285 Leu Arg Gln Gly Val Arg Gly Ile Ser Asp Ile Ile Thr Val Pro Gly 295 Leu Val Asn Val Asp Phe Ala Asp Val Arq Ala Ile Met Ala Asn Ala Gly Ser Ser Leu Met Gly Ile Gly Thr Ala Thr Gly Lys Ser Lys Ala 330 Arg Glu Ala Ala Leu Ser Ala Ile Gln Ser Pro Leu Leu Asp Val Gly 345 Ile Glu Arg Ala Thr Gly Ile Val Trp Asn Ile Thr Gly Gly Ser Asp

360 Met Thr Leu Phe Glu Val Asn Ala Ala Ala Glu Val Ile Tyr Asp Leu 375 Val Asp Pro Asn Ala Asn Leu Ile Phe Gly Ala Val Val Asp Glu Ala 395 390 Leu His Asp Gln Ile Ser Ile Thr Leu Ile Ala Thr Gly Phe Ser Ser 410 405 Gln Asp Asp Pro Asp Ala Arg Ser Met Gln Tyr Ala Ser Arg Val Leu 425 430 420 Glu Gly Gln Ala Gly Arg Ser Ser Met Ala Ser Ser Arg Gly Gly Asn 445 440 Ser Ser Thr Ile Asn Ile Pro Asn Phe Leu Arg Lys Arg Gly Gln Arg 455

<210> 23 <211> 398 <212> PRT

<213> Guillardia theta

<400> 23 Met Tyr Phe Ile Gln Asn Ile Lys Cys Tyr Gln Phe Asp Lys Lys Asn 10 Ile Phe Lys Thr Ile Asn Lys Phe Arg Cys Arg Ser Gln Ser Leu Ile 20 Lys Ser Asn Ile Ser Glu Asp Ser Phe Phe Asn Gln Glu Ile Ser Ser Ser Pro Cys Val Ile Lys Val Ile Gly Val Gly Gly Gly Gly Asn 55 Ala Val Asn Arg Met Val Gly Gly Val Glu Gly Val Glu Phe Trp Ser 70 Ile Asn Thr Asp Ala Gln Ala Leu Ser Arg Ser Leu Ala Pro Asn Thr 90 85 Cys Asn Ile Gly Ala Lys Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn 105 Pro Glu Ile Gly Arg Lys Ala Ala Glu Glu Ser Arg Asp Leu Ile Ala 125 120 Glu Ala Val Ser Ala Gly Asp Leu Val Phe Val Thr Ala Gly Met Gly 140 135 Gly Gly Thr Gly Ser Gly Ala Ala Pro Ile Val Ala Glu Val Ala Lys 155 150 Glu Met Gly Cys Leu Thr Val Gly Val Val Thr Lys Pro Phe Ala Phe 170 Glu Gly Lys Arq Arq Met Gln Gln Ala Asn Asp Ala Ile Leu Asn Leu 185 Arg Asn Lys Val Asp Thr Leu Ile Val Val Ser Asn Asp Lys Leu Leu 205 200 Gln Ile Val Pro Asp Asn Thr Pro Leu Gln Asp Ala Phe Ser Val Ala 220 215 Asp Asp Ile Leu Arg Gln Gly Val Val Gly Ile Ser Glu Ile Ile Val 235 230 Arg Pro Gly Leu Ile Asn Val Asp Phe Ala Asp Val Arg Ser Val Met 250 245 Ala Asp Ala Gly Ser Ala Leu Met Gly Ile Gly Thr Gly Ser Gly Lys 270 265 260 Thr Arg Ala Gln Asp Ala Ala Val Ala Ala Ile Ser Ser Pro Leu Leu 280 285

Asp Phe Pro Ile Glu Lys Ala Arg Gly Ile Val Phe Asn Ile Thr Gly 295 Gly Gln Asp Met Thr Leu His Glu Ile Asn Ser Ala Ala Glu Val Ile 310 315 Tyr Glu Ala Val Asp Ser Asn Ala Asn Ile Ile Phe Gly Ala Leu Val 330 325 Asp Asp Asn Met Glu Asn Glu Ile Ser Ile Thr Val Val Ala Thr Gly 345 340 Phe Thr Gln Pro Asn Asp Ser Lys Phe Phe Ser Thr Lys Ser Ala Val 360 365 Asp Phe Ser Lys Ile Tyr Asp Asn Lys Lys Thr Lys Ser Thr Tyr Lys 375 380 Glu Ser Arg Ala Glu Phe Ser Asp Leu Trp Lys Lys Phe Tyr 390

<210> 24 <211> 368 <212> PRT <213> Mallomonas splendens

<400> 24 Gly Val Glu Leu Trp Val Val Asn Thr Asp Ala Gln Ala Leu Ser Arg Ser Ser Ala Lys Arg Arg Leu Asn Ile Gly Lys Val Leu Ser Arg Gly 25 Leu Gly Ala Gly Gly Asn Pro Ala Ile Gly Ala Lys Ala Ala Glu Glu 40 Ser Arg Glu Glu Ile Met Ala Val Val Lys Asn Ala Asp Leu Val Phe Val Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro Val 70 Val Ala Glu Cys Ala Lys Glu Ala Gly Ala Leu Thr Val Gly Val Val 90 Thr Lys Pro Phe Gly Phe Glu Gly Arg Lys Arg Met Gln Gln Ala Arg 105 Asn Ala Ile Leu Glu Met Lys Asp Lys Val Asp Thr Leu Ile Val Val 120 Ser Asn Asp Lys Leu Leu Lys Ile Val Pro Asp Asn Thr Pro Leu Thr 135 140 Glu Ala Phe Leu Val Ala Asp Asp Ile Leu Arg Gln Gly Val Val Gly 155 150 Ile Thr Glu Ile Ile Val Lys Pro Gly Leu Val Asn Val Asp Phe Ala 170 Asp Val Arg Thr Ile Met Gly Asn Ala Gly Thr Ala Leu Met Gly Ile 190 185 Gly His Gly Lys Gly Lys Asn Arg Ala Lys Asp Ala Ala Leu Ser Ala 200 205 Ile Ser Ser Pro Leu Leu Asp Phe Pro Ile Thr Arg Ala Lys Gly Ile 220 215 Val Phe Asn Ile Val Gly Gly Ser Asp Met Ser Leu Gln Glu Ile Asn 235 230 Ala Ala Ala Glu Val Ile Tyr Glu Asn Val Asp Gln Asp Ala Asn Ile 250 Ile Phe Gly Ala Met Val Asp Asp Lys Met Thr Ser Gly Glu Val Ser Ile Thr Val Leu Ala Thr Gly Phe Ser Thr Asp Tyr Phe Ser Asn Asp

280 275 Gly Ser Gly Leu Glu Asn Leu Pro Pro Asn Arg Leu Ser Pro Pro Lys 295 Thr Val Gly Ser Ala Lys Ser Tyr Ser Glu Tyr Glu Pro Pro Ser Thr 315 310 Pro Lys Ala Glu Glu Arg Asp Ser Glu Tyr Leu Ser Ala Asp Asp Leu 330 325 Thr Asp Glu Ser Lys Glu Arg Asp Gln Asp Gly Lys Lys Asp Glu Glu 345 Lys Pro Lys Gly Gly Gly Phe Arg Gly Phe Ile Lys Arg Leu Phe Ser 360

<210> 25 <211> 428

<212> PRT

<213> Anabaena PCC7120

<400> 25

Met Thr Leu Asp Asn Asn Gln Glu Leu Thr Tyr Arg Asn Ser Gln Ser 10 Leu Gly Gln Pro Gly Phe Ser Leu Ala Val Asn Ser Ser Asn Pro Phe Asn His Ser Gly Leu Asn Phe Gly Gln Asn Asn Asp Ser Lys Lys Ile 40 Ser Val Glu Asn Asn Arg Ile Gly Glu Ile Val Pro Gly Arg Val Ala 55 Asn Ile Lys Val Ile Gly Val Gly Gly Gly Gly Asn Ala Val Asn Arg Met Ile Glu Ser Asp Val Ser Gly Val Glu Phe Trp Ser Ile Asn 90 Thr Asp Ala Gln Ala Leu Thr Leu Ala Gly Ala Pro Ser Arg Leu Gln 105 Ile Gly Gln Lys Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn Pro Ala 120 Ile Gly Gln Lys Ala Ala Glu Glu Ser Arg Asp Glu Ile Ala Thr Ala 135 Leu Glu Gly Ala Asp Leu Val Phe Ile Thr Ala Gly Met Gly Gly Gly 150 155 Thr Gly Thr Gly Ala Ala Pro Ile Val Ala Glu Val Ala Lys Glu Met 165 170 Gly Ala Leu Thr Val Gly Val Val Thr Arg Pro Phe Val Phe Glu Gly 180 185 Arg Arg Arg Thr Ser Gln Ala Glu Gln Gly Ile Glu Gly Leu Lys Ser 200 205 Arg Val Asp Thr Leu Ile Ile Ile Pro Asn Asn Lys Leu Leu Glu Val 215 220 Ile Pro Glu Gln Thr Pro Val Gln Glu Ala Phe Arg Tyr Ala Asp Asp 230 235 Val Leu Arg Gln Gly Val Gln Gly Ile Ser Asp Ile Ile Thr Ile Pro 250 245 Gly Leu Val Asn Val Asp Phe Ala Asp Val Arg Ala Val Met Ala Asp Ala Gly Ser Ala Leu Met Gly Ile Gly Val Ser Ser Gly Lys Ser Arg 280 285 Ala Arg Glu Ala Ala Ile Ala Ala Ile Ser Ser Pro Leu Leu Glu Cys 290 295 300

Ser Ile Glu Gly Ala Arg Gly Val Val Phe Asn Ile Thr Gly Gly Ser 310 315 Asp Leu Thr Leu His Glu Val Asn Ala Ala Ala Glu Thr Ile Tyr Glu 330 Val Val Asp Pro Asn Ala Asn Ile Ile Phe Gly Ala Val Ile Asp Asp 345 Arg Leu Gln Gly Glu Val Arg Ile Thr Val Ile Ala Thr Gly Phe Thr 360 365 Gly Glu Ile Gln Ala Ala Pro Gln Gln Asn Ala Ala Asn Ala Arg Val 375 380 Val Ser Ala Pro Pro Lys Arg Thr Pro Thr Gln Thr Pro Leu Thr Asn 390 395 Ser Pro Ala Pro Thr Pro Glu Pro Lys Glu Lys Ser Gly Leu Asp Ile 405 410 Pro Asp Phe Leu Gln Arg Arg Arg Pro Pro Lys Asn

<210> 26 <211> 430 <212> PRT <213> Synechocystis PCC6803

<400> 26 Met Thr Leu Asn Asn Asp Leu Pro Leu Asn Asn Ile Gly Phe Thr Gly Ser Gly Leu Asn Asp Gly Thr Glu Gly Leu Asp Asp Leu Phe Ser Ser Ser Ile Val Asp Asn Glu Pro Leu Glu Ala Leu Val Glu Thr Pro Thr 40 Phe Ala Ser Pro Ser Pro Asn Leu Lys Arg Asp Gln Ile Val Pro Ser 55 Asn Ile Ala Lys Ile Lys Val Ile Gly Val Gly Gly Gly Cys Asn Ala Val Asn Arg Met Ile Ala Ser Gly Val Thr Gly Ile Asp Phe Trp 90 Ala Ile Asn Thr Asp Ser Gln Ala Leu Thr Asn Thr Asn Ala Pro Asp 105 Cys Ile Gln Ile Gly Gln Lys Leu Thr Arg Gly Leu Gly Ala Gly Gly 120 125 Asn Pro Ala Ile Gly Gln Lys Ala Ala Glu Glu Ser Arg Asp Glu Ile 140 135 Ala Arg Ser Leu Glu Gly Thr Asp Leu Val Phe Ile Thr Ala Gly Met 155 150 Gly Gly Gly Thr Gly Thr Gly Ala Ala Pro Ile Val Ala Glu Val Ala 175 165 170 Lys Glu Met Gly Cys Leu Thr Val Gly Ile Val Thr Arg Pro Phe Thr 185 190 Phe Glu Gly Arg Arg Ala Lys Gln Ala Glu Glu Gly Ile Asn Ala 200 205 Leu Gln Ser Arg Val Asp Thr Leu Ile Val Ile Pro Asn Asn Gln Leu 215 Leu Ser Val Ile Pro Ala Glu Thr Pro Leu Gln Glu Ala Phe Arg Val 235 230 Ala Asp Asp Ile Leu Arg Gln Gly Val Gln Gly Ile Ser Asp Ile Ile 250 Ile Ile Pro Gly Leu Val Asn Val Asp Phe Ala Asp Val Arg Ala Val

265 Met Ala Asp Ala Gly Ser Ala Leu Met Gly Ile Gly Val Gly Ser Gly 280 Lys Ser Arg Ala Lys Glu Ala Ala Thr Ala Ala Ile Ser Ser Pro Leu 300 295 Leu Glu Ser Ser Ile Gln Gly Ala Lys Gly Val Val Phe Asn Val Thr 315 310 Gly Gly Thr Asp Leu Thr Leu His Glu Val Asn Val Ala Ala Glu Ile 325 330 Ile Tyr Glu Val Val Asp Ala Asp Ala Asn Ile Ile Phe Gly Ala Val 340 345 Ile Asp Asp Arg Leu Gln Gly Glu Met Arg Ile Thr Val Ile Ala Thr 365 360 Gly Phe Asn Gly Glu Lys Glu Lys Pro Gln Ala Lys Thr Ser Ser Lys 375 380 Pro Val Leu Ser Gly Pro Pro Ala Gly Val Glu Thr Val Pro Ser Thr 390 395 Thr Thr Pro Glu Asp Pro Leu Gly Glu Ile Pro Met Ala Pro Glu Leu 405 410 Asp Ile Pro Asp Phe Leu Gln Lys Arg Arg Phe Pro Arg Arg 425

<210> 27 <211> 433 <212> PRT

<213> Arabidopsis thaliana

<400> 27 Met Ala Ile Ile Pro Leu Ala Gln Leu Asn Glu Leu Thr Ile Ser Ser 10 Ser Ser Ser Ser Phe Leu Thr Lys Ser Ile Ser Ser His Ser Leu His 25 Ser Ser Cys Ile Cys Ala Ser Ser Arg Ile Ser Gln Phe Arg Gly Gly 40 Phe Ser Lys Arg Arg Ser Asp Ser Thr Arg Ser Lys Ser Met Arg Leu Arg Cys Ser Phe Ser Pro Met Glu Ser Ala Arg Ile Lys Val Ile Gly 70 Val Gly Gly Gly Asn Asn Ala Val Asn Arg Met Ile Ser Ser Gly 85 90 Leu Gln Ser Val Asp Phe Tyr Ala Ile Asn Thr Asp Ser Gln Ala Leu 100 105 Leu Gln Phe Ser Ala Glu Asn Pro Leu Gln Ile Gly Glu Leu Leu Thr 125 120 Arg Gly Leu Gly Thr Gly Gly Asn Pro Leu Leu Gly Glu Gln Ala Ala 135 140 Glu Glu Ser Lys Asp Ala Ile Ala Asn Ala Leu Lys Gly Ser Asp Leu 150 155 Val Phe Ile Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala 170 Pro Val Val Ala Gln Ile Ser Lys Asp Ala Gly Tyr Leu Thr Val Gly 185 Val Val Thr Tyr Pro Phe Ser Phe Glu Gly Arg Lys Arg Ser Leu Gln 200 205 Ala Leu Glu Ala Ile Glu Lys Leu Gln Lys Asn Val Asp Thr Leu Ile 215

Val Ile Pro Asn Asp Arg Leu Leu Asp Ile Ala Asp Glu Gln Thr Pro 235 230 Leu Gln Asp Ala Phe Leu Leu Ala Asp Asp Val Leu Arg Gln Gly Val 250 Gln Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn Val Asp 265 Phe Ala Asp Val Lys Ala Val Met Lys Asp Ser Gly Thr Ala Met Leu 280 Gly Val Gly Val Ser Ser Ser Lys Asn Arg Ala Glu Glu Ala Ala Glu 295 300 Gln Ala Thr Leu Ala Pro Leu Ile Gly Ser Ser Ile Gln Ser Ala Thr 310 315 Gly Val Val Tyr Asn Ile Thr Gly Gly Lys Asp Ile Thr Leu Gln Glu 330 325 Val Asn Arg Val Ser Gln Val Val Thr Ser Leu Ala Asp Pro Ser Ala 345 340 Asn Ile Ile Phe Gly Ala Val Val Asp Asp Arg Tyr Thr Gly Glu Ile 360 His Val Thr Ile Ile Ala Thr Gly Phe Ser Gln Ser Phe Gln Lys Thr 375 Leu Leu Thr Asp Pro Arg Ala Ala Lys Leu Leu Asp Lys Met Gly Ser 390 395 Ser Gly Gln Gln Glu Asn Lys Gly Met Ser Leu Pro His Gln Lys Gln 410 405 Ser Pro Ser Thr Ile Ser Thr Lys Ser Ser Ser Pro Arg Arg Leu Phe 425 Phe

<210> 28 <211> 423 <212> PRT <213> Pisum sativum

Met Ala Thr Leu Leu Pro Ser Thr Ile Ser Asn Pro Asn Lys Leu Thr Ser Tyr Ser Ser Leu Phe His Asn Ala Ser Leu Ser Thr Ser Pro Ser Ser Leu Thr Thr Ser Val Ser Ile Tyr Pro Lys Thr Gln Arg Phe 40 Gly Arg Arg Phe Gly Ser Val Arg Cys Ser Leu Ala Tyr Val Asp Asn Ala Lys Ile Lys Val Val Gly Ile Gly Gly Gly Asn Asn Ala Val 70 75 Asn Arg Met Ile Gly Ser Gly Leu Gln Gly Val Asp Phe Tyr Ala Ile 85 90 Asn Thr Asp Ala Gln Ala Leu Leu His Ser Ala Ala Glu Asn Pro Ile 105 100 Lys Ile Gly Glu Leu Leu Thr Arg Gly Leu Gly Thr Gly Gly Asn Pro 120 Leu Leu Gly Glu Gln Ala Ala Glu Glu Ser Lys Glu Ala Ile Ala Asn 135 Ala Leu Lys Gly Ser Asp Leu Val Phe Ile Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro Val Val Ala Gln Ile Ser Lys Glu

170 Ala Gly Tyr Leu Thr Val Gly Val Val Thr Tyr Pro Phe Ser Phe Glu 180 185 Gly Arg Lys Arg Ser Leu Gln Ala Leu Glu Ala Ile Glu Lys Leu Gln 200 205 Lys Asn Val Asp Thr Leu Ile Val Ile Pro Asn Asp Arg Leu Leu Asp 220 215 Ile Ala Asp Glu Gln Met Pro Leu Gln Asp Ala Phe Arg Leu Ala Asp 235 230 Asp Val Leu Arg Gln Gly Val Gln Gly Ile Ser Asp Ile Ile Thr Ile 250 245 Pro Gly Leu Val Asn Val Asp Phe Ala Asp Val Lys Ala Val Met Lys 260 265 Asp Ser Gly Thr Ala Met Leu Gly Val Gly Val Ser Ser Gly Lys Asn 280 275 Arg Ala Glu Glu Ala Ala Glu Gln Ala Thr Leu Ala Pro Leu Ile Gly 295 Ser Ser Ile Gln Ser Ala Thr Gly Val Val Tyr Asn Ile Thr Gly Gly 315 Lys Asp Ile Thr Leu Gln Glu Val Asn Arg Val Ser Gln Val Val Thr 325 330 Ser Leu Ala Asp Pro Ser Ala Asn Ile Ile Phe Gly Ala Val Asp 340 345 Asp Arg Tyr Thr Gly Glu Ile His Val Thr Ile Ile Ala Thr Gly Phe 360 Ser Gln Ser Phe Gln Lys Lys Leu Leu Thr Asp Pro Arg Ala Ala Lys 380 375 Leu Leu Asp Lys Val Ala Glu Gly Lys Glu Ser Lys Thr Val Pro Pro 390 395 Pro Leu Lys Ser Ser Asn Phe Ser Ser Lys Val Glu Ser Arg Pro Pro 405 410 Pro Pro Arg Lys Leu Phe Phe 420

<210> 29 <211> 413 <212> PRT

<213> Nicotiana tabacum

<400> 29

Met Ala Thr Ile Ser Asn Pro Ala Glu Ile Ala Ala Ser Ser Pro Ser 10 1 5 Phe Ala Phe Tyr His Ser Ser Phe Ile Pro Lys Gln Cys Cys Phe Thr 25 20 Lys Ala Arg Arg Lys Ser Leu Cys Lys Pro Gln Arg Phe Ser Ile Ser 40 Ser Ser Phe Thr Pro Phe Asp Ser Ala Lys Ile Lys Val Ile Gly Val 55 Gly Gly Gly Asn Asn Ala Val Asn Arg Met Ile Gly Ser Gly Leu Gln Gly Val Asp Phe Tyr Ala Ile Asn Thr Asp Ala Gln Ala Leu Leu 90 Gln Ser Ala Ala Glu Asn Pro Leu Gln Ile Gly Glu Leu Leu Thr Arg 105 Gly Leu Gly Thr Gly Gly Asn Pro Leu Leu Gly Glu Gln Ala Ala Glu 120

Glu Ser Lys Glu Ala Ile Ala Asn Ser Leu Lys Gly Ser Asp Met Val 135 Phe Ile Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro 155 Val Val Ala Gln Ile Ala Lys Glu Ala Gly Tyr Leu Thr Val Gly Val 170 Val Thr Tyr Pro Phe Ser Phe Glu Gly Arg Lys Arg Ser Val Gln Ala 185 Leu Glu Ala Ile Glu Lys Leu Gln Lys Asn Val Asp Thr Leu Ile Val 200 Ile Pro Asn Asp Arg Leu Leu Asp Ile Ala Asp Glu Gln Thr Pro Leu 215 220 Gln Asp Ala Phe Leu Leu Ala Asp Asp Val Leu Arg Gln Gly Val Gln 235 230 Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn Val Asp Phe 245 250 Ala Asp Val Lys Ala Val Met Lys Asp Ser Gly Thr Ala Met Leu Gly 265 260 Val Gly Val Ser Ser Lys Asn Arg Ala Glu Glu Ala Ala Glu Gln 280 Ala Thr Leu Ala Pro Leu Ile Gly Ser Ser Ile Gln Ser Ala Thr Gly 295 300 Val Val Tyr Asn Ile Thr Gly Gly Lys Asp Ile Thr Leu Gln Glu Val 310 315 Asn Arg Val Ser Gln Val Val Thr Ser Leu Ala Asp Pro Ser Ala Asn 325 330 Ile Ile Phe Gly Ala Val Val Asp Glu Arg Tyr Asn Gly Glu Ile His 340 345 Val Thr Ile Ile Ala Thr Gly Phe Thr Gln Ser Phe Gln Lys Thr Leu 360 365 Leu Ser Asp Pro Arg Gly Ala Lys Leu Ala Asp Lys Gly Pro Val Ile 375 380 Gln Glu Ser Met Ala Ser Pro Val Thr Leu Arg Ser Ser Thr Ser Pro 390 Ser Thr Thr Ser Arg Thr Pro Thr Arg Arg Leu Phe Phe

<210> 30 <211> 419 <212> PRT <213> Nicotiana tabacum

105 Gly Glu Leu Leu Thr Arg Gly Leu Gly Thr Gly Gly Asn Pro Leu Leu 120 125 Gly Glu Gln Ala Ala Glu Glu Ser Lys Glu Ala Ile Ala Asn Ser Leu 135 Lys Gly Ser Asp Met Val Phe Ile Thr Ala Gly Met Gly Gly Thr 155 150 Gly Ser Gly Ala Ala Pro Val Val Ala Gln Ile Ala Lys Glu Ala Gly 170 Tyr Leu Thr Val Gly Val Val Thr Tyr Pro Phe Ser Phe Glu Gly Arg 180 185 Lys Arg Ser Val Gln Ala Leu Glu Ala Ile Glu Lys Leu Gln Lys Asn 200 Val Asp Thr Leu Ile Val Ile Pro Asn Asp Arg Leu Leu Asp Ile Ala 220 215 Asp Glu Gln Thr Pro Leu Gln Asp Ala Phe Leu Leu Ala Asp Asp Val 235 230 Leu Arg Gln Gly Val Gln Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly 250 245 Leu Val Asn Val Asp Phe Ala Asp Val Lys Ala Val Met Lys Asp Ser 265 Gly Thr Ala Met Leu Gly Val Gly Val Ser Ser Lys Asn Arg Ala 285 280 Glu Glu Ala Ala Glu Gln Ala Thr Leu Ala Pro Leu Ile Gly Ser Ser 295 300 Ile Gln Ser Ala Thr Gly Val Val Tyr Asn Ile Thr Gly Gly Lys Asp 310 315 Ile Thr Leu Gln Glu Val Asn Arg Val Ser Gln Val Val Thr Ser Leu 325 330 Ala Asp Pro Ser Ala Asn Ile Ile Phe Gly Ala Val Asp Glu Arg 345 340 Tyr Asn Gly Glu Ile His Val Thr Ile Ile Ala Thr Gly Phe Thr Gln 365 360 Ser Phe Gln Lys Thr Leu Leu Ser Asp Pro Arg Gly Ala Lys Leu Ala 375 Asp Lys Gly Pro Val Ile Gln Glu Ser Met Ala Ser Pro Val Thr Leu 390 395 Arg Ser Ser Thr Ser Pro Ser Thr Thr Ser Arg Thr Pro Thr Arg Arg 410 Leu Phe Phe

<210> 31 <211> 408 <212> PRT

<213> Nicotiana tabacum

Asn Ala Val Asn Arg Met Ile Gly Ser Gly Leu Gln Gly Val Asp Phe Tyr Ala Val Asn Thr Asp Ala Gln Ala Leu Leu Gln Ser Thr Val Glu 90 Asn Pro Ile Gln Ile Gly Glu Leu Leu Thr Arg Gly Leu Gly Thr Gly 100 105 Gly Asn Pro Leu Leu Gly Glu Gln Ala Ala Glu Glu Ser Lys Glu His 120 Ile Ala Asn Ala Leu Lys Gly Ser Asp Met Val Phe Ile Thr Ala Gly 140 135 Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro Val Val Ala Gln Ile 150 155 Ala Lys Glu Ala Gly Tyr Leu Thr Val Gly Val Val Thr Tyr Pro Phe 170 165 Ser Phe Glu Gly Arg Lys Arg Ser Leu Gln Ala Leu Glu Ala Ile Glu 180 185 Lys Leu Gln Lys Asn Val Asp Thr Leu Ile Val Ile Pro Asn Asp Arg 200 Leu Leu Asp Ile Ala Asp Glu Gln Thr Pro Leu Gln Asn Ala Phe Leu 215 220 Leu Ala Asp Asp Val Leu Cys Gln Gly Val Gln Gly Ile Ser Asp Ile 230 235 Ile Thr Ile Pro Gly Leu Val Asn Val Asp Phe Ala Asp Val Lys Ala 245 250 Ile Met Lys Asp Ser Gly Thr Ala Met Leu Gly Val Gly Val Ser Ser 265 260 Ser Arg Asn Arg Ala Glu Glu Ala Ala Glu Gln Ala Thr Leu Ala Pro 280 Leu Ile Gly Leu Ser Ile Gln Ser Ala Thr Gly Val Val Tyr Asn Ile 295 Thr Gly Gly Lys Asp Ile Thr Leu Gln Glu Val Asn Lys Val Ser Gln 310 315 Val Val Thr Ser Leu Ala Asp Pro Ser Ala Asn Ile Ile Phe Gly Ala 330 Val Val Asp Glu Arg Tyr Asn Gly Glu Ile Gln Val Thr Leu Ile Ala 345 Thr Gly Phe Ala Gln Ser Phe Gln Asn Ser Leu Leu Thr Asp Pro Arg 360 Gly Ala Lys Leu Val Asp Lys Ser Lys Gly Thr Thr Glu Arg Thr Val 380 375 Ser Pro Asp Thr Leu Arg Ser Ser Glu Ser Pro Ser Thr Lys Pro Arg 390 395 Pro Ala Ala Arg Arg Leu Phe Phe 405

<210> 32 <211> 413 <212> PRT <213> Nicotiana tabacum

Ser Ser Ser Ser Asn Ser Leu Ser Phe Tyr His Ser Thr Arg Phe Thr 20 25 30
Gln Cys Phe Ser Pro Lys Ser Leu Cys Lys Arg Gln Arg Arg Phe

Ser Ile Cys Ser Ser Leu Ser Ser Ala Lys Ile Lys Val Val Gly Val Gly Gly Gly Asn Asn Ala Val Asn Arg Met Ile Gly Ser Gly Leu Gln Gly Val Asp Phe Tyr Ala Val Asn Thr Asp Ala Gln Ala Leu Leu Gln Ser Thr Val Glu Asn Pro Ile Gln Ile Gly Glu Leu Leu Thr Arg Gly Leu Gly Thr Gly Gly Asn Pro Leu Leu Gly Glu Gln Ala Ala Glu Glu Ser Lys Glu His Ile Ala Asn Ala Leu Lys Gly Ser Asp Met Val Phe Ile Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro Val Val Ala Gln Ile Ala Lys Glu Ala Gly Tyr Leu Thr Val Gly Val Val Thr Tyr Pro Phe Ser Phe Glu Gly Arg Lys Arg Ser Leu Gln Ala Leu Glu Ala Ile Glu Lys Leu Gln Lys Asn Val Asp Thr Leu Ile Val Ile Pro Asn Asp Arg Leu Leu Asp Ile Ala Asp Glu Gln Thr Pro Leu Gln Asn Ala Phe Leu Leu Ala Asp Asp Val Leu Cys Gln Gly Val Gln Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn Val Asp Phe Ala Asp Val Lys Ala Ile Met Lys Asp Ser Gly Thr Ala Met Leu Gly Val Gly Val Ser Ser Ser Arg Asn Arg Ala Glu Glu Ala Ala Glu Gln Ala Thr Leu Ala Pro Leu Ile Gly Ser Ser Ile Gln Ser Ala Thr Gly Asp Val Tyr Asn Ile Thr Gly Gly Lys Asp Ile Thr Leu Gln Glu Val Asn Lys Val Ser Gln Val Val Thr Ser Leu Ala Asp Pro Ser Ala Asn Ile Ile Phe Gly Ala Val Val Asp Glu Arg Tyr Asn Gly Glu Ile Gln Val Thr Leu Ile Ala Thr Gly Phe Ala Gln Ser Phe Gln Asn Ser Leu Leu Thr Asp Pro Arg Gly Ala Lys Leu Val Asp Lys Ser Lys Gly Thr Thr Glu Arg Thr Val Ser Pro Asp Thr Leu Arg Ser Ser Glu Ser Pro Ser Thr Lys Pro Arg Pro Ala Thr Arg Arg Leu Phe Phe